



WFVA/CiDRA File Nos.: 712-002-165/CC-0273

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Re application of: Michael A. Davis et al.

Serial No.: 09/648,525 : Examiner: A. V. Amari

Filed: 26 August 2000 : Group Art Unit: 2872

For: **OPTICAL FILTER HAVING A SHAPED FILTER FUNCTION**

MAIL STOP AF

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

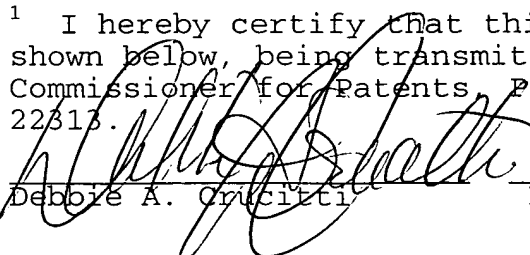
REPLY BRIEF

Dear Sir:

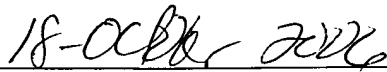
This is a Reply to an Answer mailed 18 April 2006 being submitted **in triplicate** with a four month extension of time.¹

The Commissioner is hereby requested to extend the time to file this reply for four months to 18 October 2006 by granting a four month extension of time. A check is enclosed for the petition fee; however, the Commissioner is hereby authorized to charge deposit account no. 23-0442 for whatever petition fee or deficiency in such a fee that may be necessary to maintain the pendency of the instant patent application. If any further extension of time is deemed necessary to maintain the pendency of the application, the Commissioner is hereby conditionally

¹ I hereby certify that this correspondence is, on the date shown below, being transmitted by first class mail to the Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313.


Debbie A. Crucitti

Date


18-Oct-2006

requested to grant the same.

REMARKS

There is no reply to sections (1) to (9) and (11) of the Examiner's Answer. In particular, the Ground of Rejection in section (9) appears to be identical to the reasoning set forth in the final rejection mailed 17 March 2005, and all of the points therein were addressed in Applicants' Appeal Brief.

The following is a reply to the "Response to Argument" section (10) on pages 15-23 of the Examiner's Answer:

I. RESPONSE RE MAIN INDEPENDENT CLAIM

Page 15, line 12 through Page 17, line 2

This is a reply to the Response to Argument in the Answer on page 15, line 12 through page 17, line 2:

The Answer on page 15, line 12 through page 17, line 2, merely tries to summarize only a selective portion of Applicants' argument that spans from page 7, line 10, through page 11, line 7. Applicants' argument was made in support of the patentability of the main independent claim 1. The Board is respectfully requested to review Applicants' argument in its entirety on pages 7-11 of the Appeal Brief.

In response to the paragraph bridging pages 16-17, it is

respectfully submitted that a person skilled in the art would appreciate that a filter response for functions and objects of the invention described in Li would be rectangular in shape having a substantially flat response, and that while a typical rectangular filter response has sloped sides as shown in Figure 2a of Li, one skilled in the art will recognize that the slope of the sides of the filter response would be steep, and therefore, Li's simplified filter response shown in Figure 2a is not in fact "ramped" or "gaussian" in contrast to that stated in the remarks on page 16, lines 15-20, for the following reasons:

i) A person skilled in the art would appreciate that the filter response shown in Figure 2a is "a simple graph" as stated in Li, column 3, line 46, that the filter response shown in Figure 2a is not drawn to scale, and that Li does not state that the filter response shown in Figure 2a is drawn to scale.

ii) A person skilled in the art would also appreciate that the filter 14 in Figure 1 of Li has the filter response shown in Figure 2a which is a substantially rectangular waveform, and which results in a band-pass filter that passes a certain range of frequencies and rejects (attenuates) unwanted frequencies outside that certain range.

iii) A person skilled in the art would also appreciate that, in operation, the substantially rectangular waveform of the filter response shown in Figure 2a reflects the certain range of frequencies of a wavelength division multiplexed signal (WDM) and does not reflect the unwanted frequencies outside that range of the WDM signal.

iv) A person skilled in the art would also appreciate that any ramped waveform component (i.e. not substantially rectangular) of the filter response shown in Figure 2a would undesirably reflect unwanted frequencies other than the certain range of frequency in the WDM signal, e.g. undesirably reflecting some or all of an adjacent unwanted wavelength in the WDM signal, which would adversely affect to the overall operability and performance of the wavelength and bandwidth tunable optical system of Li.

v) Because of this, a person skilled in the art would also appreciate that the substantially rectangular waveform of the filter response shown in Figure 2a would need to be as substantially rectangular as possible so as to only reflect the certain range of frequencies of the signals of interest, and would clearly not have any such substantially ramped waveform component like that shown in Figure 2a of Li.

Attached is a declaration executed by Michael A. Davis that supports how a person skilled in the art would understand, appreciate and interpret that disclosed in Li.

For all these reasons, it is respectfully submitted that a typical filter response, as described in Li, does not tend to have a "ramped" or "Gaussian" shape, and that a close examination of Figure 2a shows that the filter response is rectangular in shape having a substantially 'flat' response, in contrast to that stated in the Examiner's Answer, on page 16, lines 15-20.

Page 17, line 3 through Page 18, line 8

This is a reply to the Response to Argument in the Answer on page 17, line 3 through page 18, line 8:

The Answer on page 17, lines 3-9, tries to summarize a selective portion of Applicants' argument in the paragraph bridging pages 10-11 of the Appeal Brief. Applicants' argument was made in response to the reasoning in paragraph 2 of the March 17th Office Action, setting forth reasons why there is no motivation to combine the cited prior art in the manner proposed. The Board is respectfully requested to review Applicants' argument in its entirety on pages 10-11 of the Appeal Brief.

The Answer in the paragraph bridging pages 17-18 provides remarks in response to Applicants' argument in the paragraph

bridging pages 10-11 of the Appeal Brief. In particular, the first sentence of the paragraph bridging pages 17-18 of the Answer takes the position that motivation to combined references "can be reasoned from knowledge that is known to one of ordinary skill in the art, established scientific principles or legal precedent established by case law"

However, in reply thereto, it is respectfully submitted that, even "if it is well known in the optical art to produce filter characteristics ... depending on [sic, "a"] response required for a particular application," nothing in Feced et al. suggests a reason to modify the teaching of Li as a whole to produce an optical output signal that is not substantially flat over a substantial portion thereof. For example, while Feced et al. discloses an optical filter having a filter function that is not substantially flat over a substantial portion thereof, it is respectfully submitted that one of ordinary skill in the art would not be motivated to combine Feced et al.' "not substantially flat" filter with one of Li's "substantially flat" filter in the manner proposed in the last paragraph of page 6 of the March 17th Office Action. It is respectfully submitted that the passage cited in Feced et al, column 11, lines 63-67, does not suggest such a reason to modify the teaching of Li as a whole to produce such an optical output signal that is not

substantially flat over a substantial portion thereof.

In further reply thereto, it is respectfully submitted that, even if there are known examples of applications where the filter response may need to be non-continuous and non-monotonic that includes sensors, phase shifted grating filters, Fabry-Perot etalons filters, comb filters and wavelength division multiplexers..., " again nothing in Feced et al. suggests a reason to modify the teaching of Li as a whole to produce an optical output signal that is not substantially flat over a substantial portion thereof. Because of this, it is respectfully submitted that neither Li nor Feced et al. suggests a need or desire "to provide for filter characteristics that are well-matched to ideal filter responses for a wide variety of applications," as stated in the reasoning on page 7, lines 1-4, of the March 17th Office Action, which appears to be the whole basis for making the proposed combination of these two cited prior art references.

Page 18, line 9 through Page 19, line 2

This is a reply to the Response to Argument in the Answer on page 18, line 9 through page 19, line 2:

The Answer on page 18, lines 9-15, is correct in pointing out that Applicants have argued that the claimed optical filter has a desired effective filter function that is **difficult or**

substantially impossible to produce by a single grating.

However, the Answer on page 18, lines 9-15, is not correct when stating that this advantage is not "presented in the original specification." Clearly, the original specification, page 9, lines 23-25, describes that:

With the approach, a desired effective filter function of the optical filter 10 can be achieved which may be **very difficult or substantially impossible to produce by a single grating**. [bold emphasis provided by the undersigned]

Page 19, line 3 through Page 20, line 8

This is a reply to the Response to Argument in the Answer on page 19, line 3 through page 20, line 8:

The Answer on page 19, lines 3-14, tries to summarize only a selective portion of Applicants' argument that spans from page 13, line 6, through page 15. Applicants' argument was made in response to the reasoning in paragraph 10, lines 13-30, of the March 17th Office Action, which tried to take the position that motivation to combine references "can be reasoned from knowledge that is known to one of ordinary skill in the art, established scientific principles or legal precedents established by prior case law." Applicants' argument set forth reasons why there is no legal justification under the Patent laws to combine cited prior art based on such so-called "reasoned from knowledge" motivation.

The Board is respectfully requested to review Applicants' argument in its entirety on pages 13-15 of the Appeal Brief.

Moreover, in response thereto, the Answer in the paragraph bridging pages 19-20 repeats the same arguments made in relation to page 15, line 12 through page 17, line 2, of the Answer.

In reply, it is respectfully submitted that Applicants' argument spanning page 13, line 6, through page 15, sets forth in detail why one of ordinary skill in the art would not be motivated to combine the cited prior art in the manner proposed based on any such so-called "reasoned from knowledge" motivation like that set forth in lines 13-30 of paragraph 10 of the March 17th Office Action.² Moreover, the Board is respectfully referred to Applicants' remarks above in relation to page 15, line 12 through page 17, line 2, of the Answer, which are not repeated herein.

Page 20, line 9 through Page 21, line 2

This is a reply to the Response to Argument in the Answer on page 20, line 9 through page 21, line 2:

The Answer on page 20, lines 9-13, again tries to summarize

² In lines 13-30 of paragraph 10 of the March 17th Office Action, the reasoning tries to further justify the basis for the proposed combination by taking the position that motivation to combine references "can be reasoned from knowledge that is known to one of ordinary skill in the art, established scientific principles

a remaining selective portion of Applicants' argument that spans from page 13, line 6, through page 15, where Applicants' set forth reasons why there is no legal justification under the patent laws for combining the cited prior art based on some alleged motivation that "can be reasoned from knowledge that is known to one of ordinary skill in the art, established scientific principles or legal precedents established by prior case law." Again, the Board is respectfully requested to review Applicants' argument in its entirety on pages 13-15 of the Appeal Brief.

In reply, it is respectfully submitted that Applicants' argument spanning from page 13, line 6, through page 15, including that on page 15, does not attack the references individually, but instead looks at the teaching of the cited prior art combination as a whole, consistent with that set forth in *In re Keller*, 208 USPQ 871 (CCPA 1981).

Further, consistent with that set forth on pages 13-15 of the Appeal Brief, the whole thrust of Li is to provide a device for modifying the wavelength, bandwidth, or both of an optical signal. The modification can include a shift of the characteristic reflective spectrum or band, or an expansion or contraction of the spectrum. The device takes the form of multiple optical elements, each having substantially flat filter

or legal precedents established by prior case law."

functions. In operation, light is first reflected off one optical element filter having one substantially flat filter function, then further reflected off a second optical element filter having a second substantially flat filter function, so as to modify the light accordingly. There is no hint or suggestion whatsoever in Li to use any other type or kind of filter function other than a substantially flat one disclosed in Li. For instance, there is no hint or suggestion whatsoever in Li to use an optical element that is not substantially flat in place of either of Li's optical elements. Because of this, it is respectfully submitted that nothing on the record suggests why one of ordinary skill in the art would even be motivated to look at that disclosed by Feced et al. to make such a substitution and/or modification in a multiple optical element device like Li's optical system. It is also respectfully submitted that nothing in paragraph 10 of the March 17th Office Action, or the paragraph bridging pages 20-21 of the Answer, suggests how or why such motivation is or "can be reasoned from knowledge that is known to one of ordinary skill in the art, established scientific principles or legal precedents established by prior case law" by one of ordinary skill in the art.

In spite of this, even for argument sake, if one of ordinary skill in the art were to look to Feced et al. to make such a

substitution and/or modification in a multiple optical element device like Li's optical system, one would find no motivation to make such a substitution and/or modification, because the whole thrust of Feced et al. is directed towards the design and implementation of an optical device or system having a single optical element with a single optical filter function. Nothing in Feced et al. even remotely suggests providing an optical filter having multiple optical elements with at least one of the first and second reflective filter functions that is not substantially flat over a substantial portion of the respective first or second reflective filter functions, as recited in claim 1, or the need or desire to do so. Because of this, even for argument sake, if one of ordinary skill in the art were to look to Feced et al., one would find no motivation to make such a substitution and/or modification to a multiple optical element device like Li's system. Finally, it is respectfully submitted that nothing in paragraph 10 of the March 17th Office Action, or the paragraph bridging pages 20-21 of the Answer, suggests why such motivation is or "can be reasoned from knowledge that is known to one of ordinary skill in the art, established scientific principles or legal precedents established by prior case law" by one of ordinary skill in the art.

Furthermore, in the sentence bridging pages 20-21 of the

Answer, it is stated that: "There is nothing in Feced et al to suggest that only one fiber grating can be used in applications or systems where a certain filter response is to be tailored or modified for a specific application." However, in response thereto, it is respectfully submitted that nothing in Feced et al. even remotely suggests providing an optical filter having multiple optical elements with at least one of the first and second reflective filter functions that is not substantially flat over a substantial portion of the respective first or second reflective filter functions, as recited in claim 1, or the need or desire to do so.

II. RESPONSE RE CERTAIN DEPENDENT CLAIMS

Page 21, lines 3-7

This is a reply to the Response to Argument in the Answer on page 21, lines 3-7.

The Answer on page 21, lines 3-7 merely tries to summarize the arguments of Applicants' argument on page 16 re certain dependent claims. The Board is respectfully requested to review Applicants' argument in its entirety on page 16 of the Appeal Brief.

In reply to the remarks on page 21, lines 6-7, see the reply above.

III. RESPONSE RE INDEPENDENT CLAIM 58 AND RELATED CLAIMS

Page 21, line 8 through Page 22, line 6

This is a reply to the Response to Argument in the Answer on page 21, line 8 through page 22, line 6:

The Answer on page 21, line 8 through page 22, line 6, merely tries to summarize only a selective portion of Applicants' argument that spans from page 16, line 15, through page 17. Applicants' argument was made in support of the patentability of independent claim 58. The Board is respectfully requested to review Applicants' argument in its entirety on pages 16-17 of the Appeal Brief.

Moreover, the Answer in the paragraph bridging pages 21-22 repeats similar arguments made in relation to page 15, line 12 through page 17, line 2, of the Answer in relation to the term "substantially." For reasons consistent with that set forth above re page 15, line 12 through page 17, line 2, of the Answer, it is respectfully submitted that a person skilled in the art after reading the patent application, including the specification in conjunction with the drawing, would appreciate what the term "substantially" means in relation to the subject matter recited in claim 58.

In addition, it is respectfully submitted that Li clearly

does not use first and second reflection wavelengths that are substantially the same, while nothing in Feced et al. hints or suggests using two reflection wavelengths that are substantially the same, as recited in claim 58. Moreover, if Li's first and second reflection wavelengths were substantially the same, then there would be no tuning of the bandwidth, which is the whole purpose of the design of Li's optical system. Further, it is respectfully submitted that Li effectively teaches away from the optical filter recited in claim 58, in such a way that there is no reason or motivation to look beyond the teaching of Li itself as a whole or to make such a modification. For all these reasons, it is respectfully submitted that Li does not teach or suggest that "the first reflective wavelength (Figure 2a) and the second reflective wavelength (Figure 2b) are substantially the same as shown in Figure 2c."

Page 22, line 7 through Page 23, line 2

This is a reply to the Response to Argument in the Answer on page 22, line 7 through page 23, line 2:

The Answer on page 22, lines 7-13 merely tries to summarize only a remaining selective portion of Applicants' argument that spans from page 16, line 15, through page 17. Applicants'

argument was made in support of the patentability of independent claim 58. Again, the Board is respectfully requested to review Applicants' argument in its entirety on pages 16-17 of the Appeal Brief.

Moreover, the Answer in the paragraph bridging pages 22-23 is identical to and repeats the same arguments made in the Answer in the paragraph bridging pages 21-22. In view of this, see the reply above to the response to Argument in the Answer on page 21, line 8 through page 22, line 6.

Page 23, lines 3-8

This is a reply to the Response to Argument in the Answer on page 23, lines 3-8.

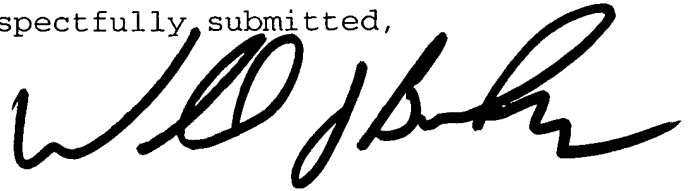
The Answer on page 23, lines 3-6 merely tries to summarize the arguments of Applicants' argument that spans from pages 18-22. Applicants' argument was made in support of the patentability of independent claim 71-72 and the remaining dependent claims. The Board is respectfully requested to review Applicants' argument in its entirety on pages 18-2 of the Appeal Brief.

In reply to the remarks on page 23, lines 7-8, see the reply above.

* * *

Reconsideration and early allowance of the claims is
earnestly solicited.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'WJ Barber', written in a cursive style.

William J. Barber
Attorney for the Applicants
Registration No. 32,720

/dap
18 October 2006
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Serial No. 09/648,525

PATENT
WFVA/CiDRA File Nos.: 712-002.165/CC-0273

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Michael A. Davis et al. : Confirmation No. 6438

Serial No.: 09/648,525 : Examiner: A. V. Amari

Filed: August 26, 2000 : Group Art Unit: 2872

Title: OPTICAL FILTER HAVING A SHAPED FILTER FUNCTION

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Commissioner for Patents

P.O. Box 1450

Alexandria, Virginia 22313-1450

DECLARATION BY MICHAEL A. DAVIS

Dear Sir:

I, Michael A. Davis, do hereby declare:

1. I am one of the named inventors for the aforementioned applications.

2. I have a PH.D. in Physics (specializing in Optics) from the University of Virginia - (1995), with about 10 years of experience in optical components and optical system design while working at the Naval Research Laboratory, where my work focused mainly on optical fiber sensing systems utilizing Interferometric topologies as well as Bragg grating based designs, and with about 10 years of experience at Cidra Corporation, the assignee of the instant patent application, initially working on Oil & Gas downhole optical Bragg grating based sensing

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systems, as well as working on optical component teams to design Bragg grating and alternate interferometric filter based telecomm products.

3. I have reviewed the reasoning in the Examiner's Answer mailed 18, 2006, including the remarks on page 16, lines 15-20, stating that 'a close examination of Figure 2a shows that the left and right sides of the filter response are not "flat" but are in fact "ramped" ... '

4. I have also reviewed the wavelength and bandwidth tunable optical system of Li (United States Patent No. 5,841,918) as a whole, including Figure 2a and the description thereof.

5. I respectfully submit that a person skilled in the art would appreciate that a filter response for functions and objects of the invention described in Li would be rectangular in shape having a substantially flat response, and that while a typical rectangular filter response has sloped sides as shown in Figure 2a of Li, one skilled in the art will recognize that the slope of the sides of the filter response would be steep, and therefore, Li's simplified filter response shown in Figure 2a is not in fact "ramped" or "gaussian" in contrast to that stated in the remarks on page 16, lines 15-20, for the following reasons:

i) A person skilled in the art would appreciate that the filter response shown in Figure 2a is "a simple graph" as stated in Li, column 3, line 46, that the filter response shown in Figure 2a is not drawn to scale, and that Li does not state that the filter response shown in Figure 2a is drawn to scale.

ii) A person skilled in the art would also appreciate that the filter 14 in Figure 1 of Li has the filter response shown in Figure 2a which is a substantially rectangular waveform, and which results in a band-pass filter that passes a certain range of

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frequencies and rejects (attenuates) unwanted frequencies outside that certain range.

iii) A person skilled in the art would also appreciate that, in operation, the substantially rectangular waveform of the filter response shown in Figure 2a reflects the certain range of frequencies of a wavelength division multiplexed signal (WDM) and does not reflect the unwanted frequencies outside that range of the WDM signal.

iv) A person skilled in the art would also appreciate that any ramped waveform component (i.e. not substantially rectangular) of the filter response shown in Figure 2a would undesirably reflect unwanted frequencies other than the certain range of frequency in the WDM signal, e.g. undesirably reflecting some or all of an adjacent unwanted wavelength in the WDM signal, which would adversely affect to the overall operability and performance of the wavelength and bandwidth tunable optical system of Li.

v) Because of this, a person skilled in the art would also appreciate that the substantially rectangular waveform of the filter response shown in Figure 2a would need to be as substantially rectangular as possible so as to only reflect the certain range of frequencies of the signals of interest, and would clearly not have any such substantially ramped waveform component like that shown in Figure 2a of Li.

6. For all these reasons, I believe that a typical filter response, as described in Li, does not tend to have a "ramped" or "Gaussian" shape, and that a close examination of Figure 2a shows that the filter response is rectangular in shape having a substantially 'flat' response, in contrast to that stated in the Examiner's Answer, on page 16, lines 15-20.

7. I hereby declare that all statements made herein of my own knowledge are true and

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that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Respectfully submitted,



Michael A. Davis
18 October 2006